Digital hydraulic power management system

The Digital Hydraulic Power Management System (DHPMS) is a solution based on the digital pump-motor technology and has shown to be a promising approach to improve the energy efficiency of hydraulic systems. The DHPMS is controlled by active on/off valves, but unlike the digital pump-motors the DHPMS has multiple independent outlets; hence, the ...

The digital hydraulic power management system is a new energy-efficient alternative to the fluid power system. Based on digital (stroke to stroke) control of each piston of the pumping unit, its functionality consisted of (1) an arbitrary number of independent outlets, (2) service of each outlet at arbitrary pressure levels, (3) energy recovery from each outlet back to the prime mover, (4 ...

DOI: 10.1016/j.enconman.2020.113247 Corpus ID: 224967521; Power management of multi-source network hydraulic system with multiple actuators @article{Yao2020PowerMO, title={Power management of multi-source network hydraulic system with multiple actuators}, author={Jing Yao and Peixun Wang and Yuxin Yin and Ma Li and Yao Li}, journal={Energy Conversion and ...

Another digital hydraulic approach which aims to lower the energy losses of complete hydraulic systems is the Digital Hydraulic Power Management System or DHPMS, which is based on a digital hydraulic pump/motor. The DHPMS can supply the control valves of actuators as in Karvonen et al.

power supply system is the Digital Hydraulic Power Management System (DHPMS), which can serve many actuators at optimised supply pressure but is also capable of motoring and transforming. This functionality holistically reduces losses in the system. Losses can be further reduced by using distributed valve systems with sophisticated control ...

Abstract. Digital hydraulics is a novel alternative to proportional or servovalve-controlled systems in fluid power engineering, providing hydraulic systems with high-energy efficiency, good controllability, and insensitivity to contamination. Switched inertance hydraulic converters (SIHCs) are new digital hydraulic devices that can adjust flow and pressure by ...

Artemis Intelligent Power Ltd. [14] is a pioneer of the digital pump-motor technology on which the digital hydraulic power management system (DHPMS) [15] is based. The DHPMS, though, is a solution that comes with multiple outlets and also enables a third function, transforming as well. Furthermore, the flow can be shared arbitrarily between the ...

Linjama, M & Huhtala, K 2010, Digital hydraulic power management system - towards lossless hydraulics. in A Laamanen & M Linjama (eds), Proceedings of the Third Workshop on Digital Fluid Power, October 13-14

2010, Tampere, Finland. pp. 5-22.

However, more advanced features are available if Digital Hydraulic Power Management System DHPMS is utilized. The DHPMS is in essence, a digital pump/motor/transformer with multiple outlets. Controller design of DHPMS in hydraulic bus application is described in the paper and simulation results show the system"s ability to simultaneously ...

The chase of this dream has resulted in a digital hydraulic power management system - a DHPMS, or more likely the DHPMS as it is currently the only one of its kind in the world. Combining these two "dream-come-true" pieces of technology together, efficient hydraulic circuit design is made feasible. However, the control of such combination is ...

"Digital hydraulic multi-pressure actuator-the concept, simulation study and first experimental results." International Journal of Fluid Power, vol. 18, no. 3 (2017): 141-152. M. Heikkilä, and M. Linjama. "Displacement control of a mobile crane using a digital hydraulic power management system." Mechatronics, vol. 23, no. 4 (2013 ...

The digital hydraulic power control system (DHPMS) is an integrated volumetric component which can provide multiple independent outputs ... Tammisto, J.; Linjama, M.; Huhtala, K. Digital Hydraulic Power Management System--Measured Characteristics of a Second Prototype. In Proceedings of the Eighth Workshop on Digital Fluid Power, Tampere ...

controlled system by 18.5 % and the series-parallel hybrid by a corresponding 20.3%. 1.3 Digital hydraulic power management system Digital hydraulic power management system (DHPMS) is one solution towards more energy efficient hydraulic systems [11]. The DHPMS can be considered as a digital pump-motor but in addition, independently controlled

DOI: 10.1016/J.MECHATRONICS.2013.03.009 Corpus ID: 110837027; Displacement control of a mobile crane using a digital hydraulic power management system @article{Heikkil2013DisplacementCO, title={Displacement control of a mobile crane using a digital hydraulic power management system}, author={Mikko Heikkil{"a} and Matti Linjama}, ...

A digital hydraulic variable control method based on multi-way valve spool displacement feedback is proposed, which combines the advantages of low cost and high reliability of the loader fixed displacement pump hydraulic system, and the distinguished energy saving effect of the Loaders" Variable Pump hydraulic system. In this paper, a digital hydraulic ...

Linjama and Heikkila 5 presented a digital hydraulic power management system, which is based on digital pump-motor technology, thus providing an option of multi-independent outlet ports. Flow input to the digital hydraulic system is controlled by pump-motor unit as per the requirement. The results show that a significant

amount of power is ...

The paper presents a case study involving a Digital Hydraulics Power Management System (DHPMS). The system is a cyber-physical system, where actions need to be taken with high precision in order to ensure that the system works safely and energy efficiently. Here high...

Displacement control of a mobile crane using a digital hydraulic power management system; Julkaisun otsikon käännös: Displacement control of a mobile crane using a digital hydraulic power management system: Mikko Heikkilä, Matti Linjama. Tutkimustuotos: Artikkeli > Scientific > ...

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